Evaluating the Impact of US Youth Soccer 'No Heading' Policy on Head and Facial Traumatic Injuries: A 20-Year Review

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Introduction

Figure 1. U-11 youth soccer

- In 2015, the US Soccer Federation (USSF) introduced a policy that eliminated heading soccer balls in youth soccer players under the age of 10 & limited the practice of heading for children ages 11 to 13 years
- This was done as a response to growing concerns over concussions in young athletes

Figure 2. Facial laceration from soccer

- The head and neck region is one of the most commonly injured parts of the body in children
- Although the effects of this policy on concussion rates have been thoroughly studied, the policy's broader effects on facial trauma and related injuries remain unexplored.
- This study aims to evaluate the relationship between 'no heading' and the incidence of head and facial injuries, providing insights into the broader safety benefits of this initiative

Method

United States CONSUMER PRODUCT SAFETY COMMISSION

- **Database**: National Electronic Injury Surveillance System (NEISS)
- **Injuries**: Avulsion, contusion or abrasions, crushing, fracture, hematoma, hemorrhage, laceration and nerve damage
- **Age**: 5 – 13 years
- **Body Parts**: Head and Face
- **Year**: 2004 – 2023

Results

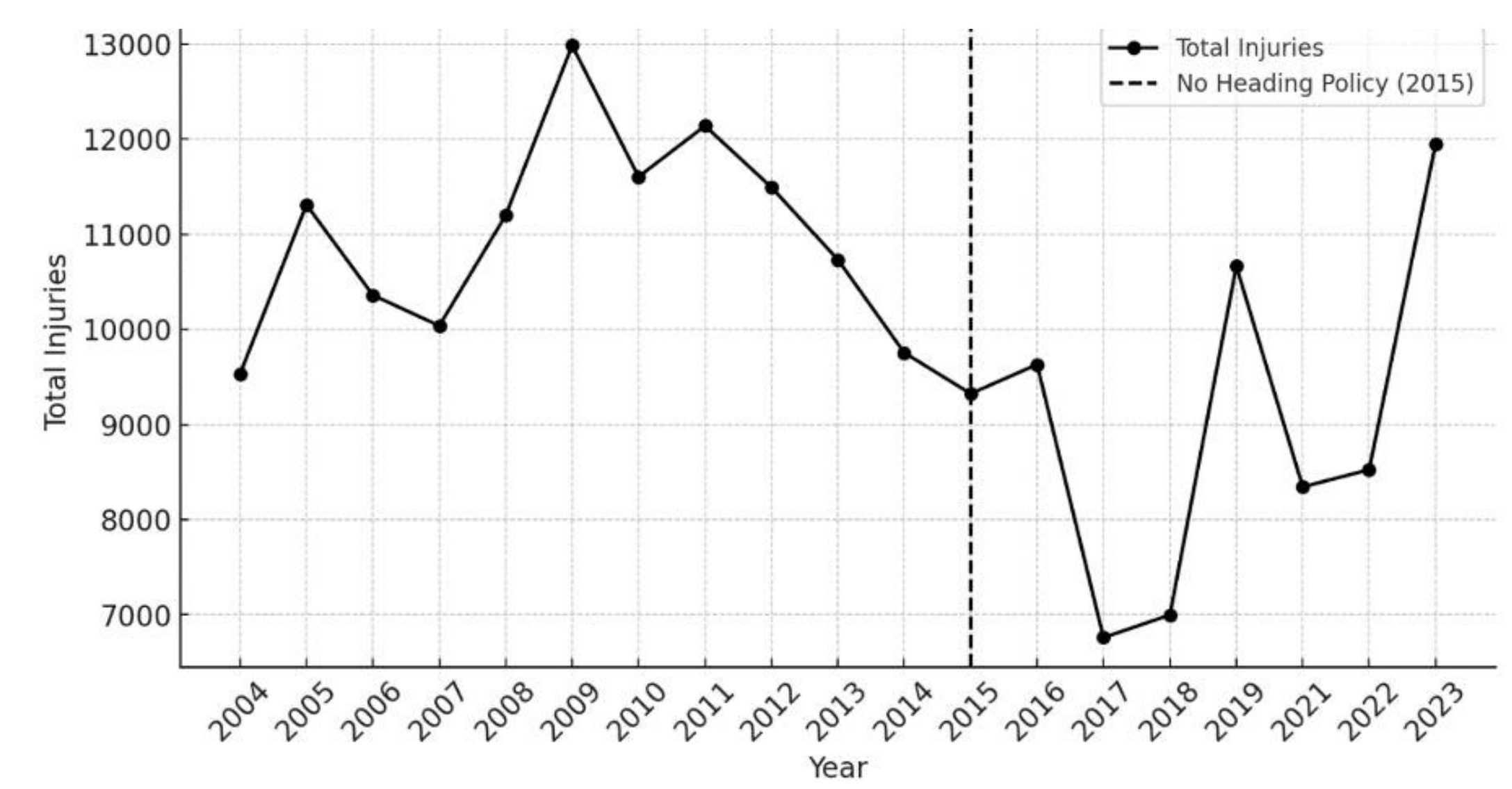

Figure 3: Trend of Head and Facial Injuries Over Time (2004-2023).
Line graph showing total annual head and facial injuries. A dashed vertical line marks the implementation of the No Heading Policy in 2015. A downward trend follows the policy's introduction, with injuries reaching their lowest point in 2017-2018 before rising sharply in recent years.

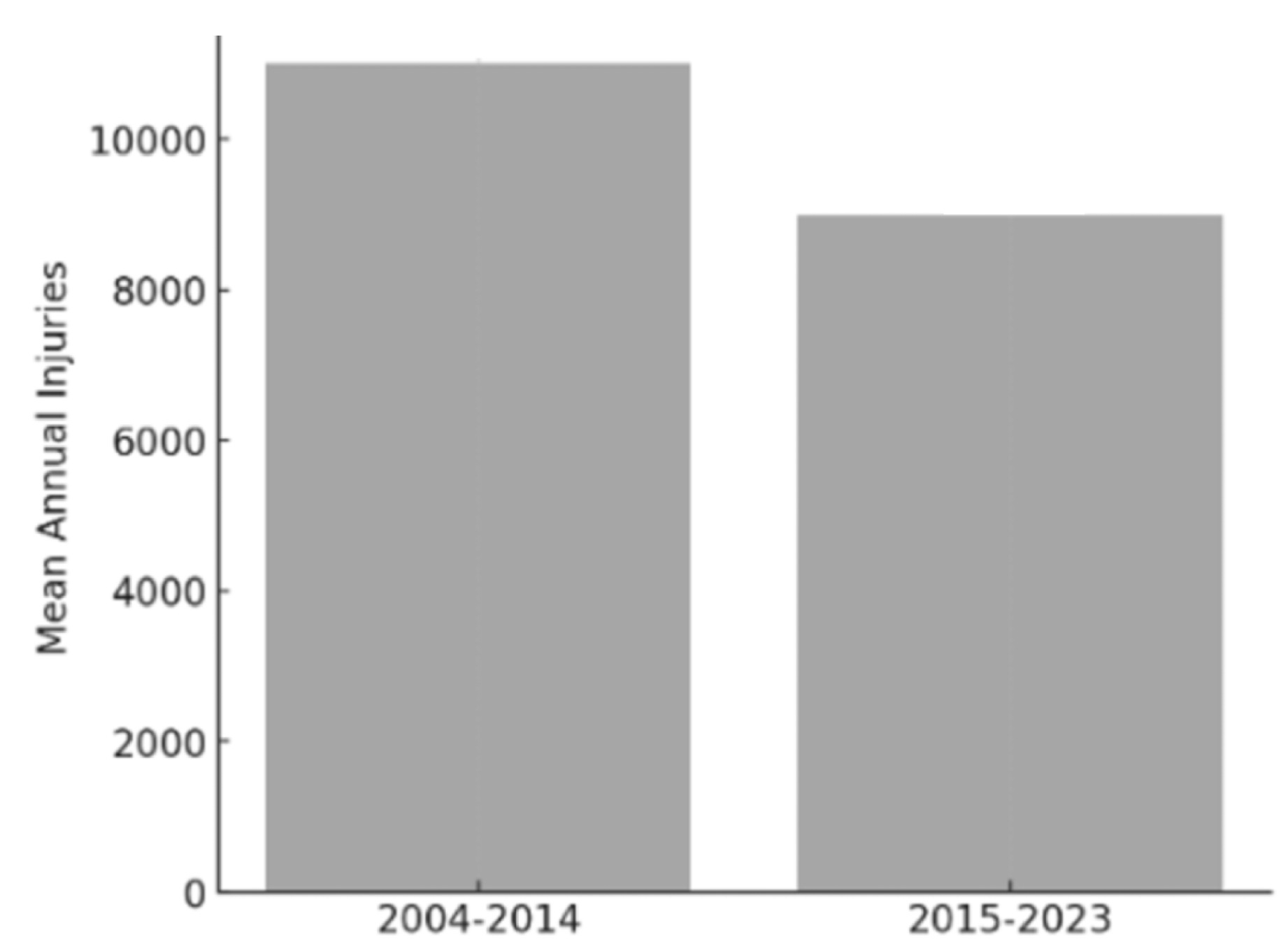

Figure 4: Comparison of Injury Rates Before vs. After 2015.
Bar chart comparing the mean annual injuries before and after the 2015 policy implementation. Injuries declined from 11,013 to 9,024.38 on average, reflecting an 18% reduction. This difference was statistically significant (p = 0.016).

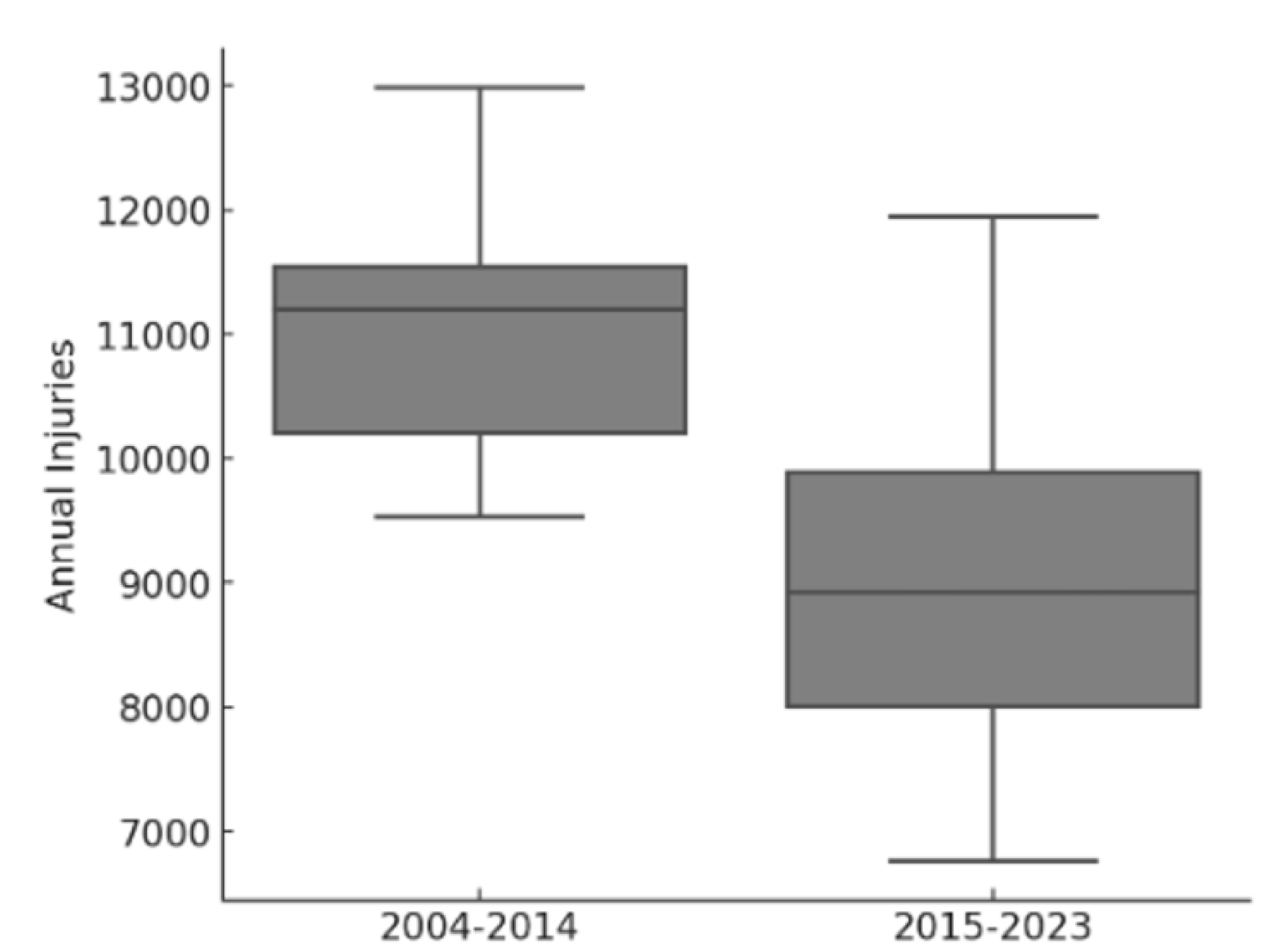

Figure 5. Boxplot of Annual Injuries Before vs. After 2015.
Boxplot comparing the distribution of injuries in the pre-policy period (2004-2014) and post-policy period (2015-2023). The post-policy era shows a lower median and greater variability in annual injuries, suggesting a change in both injury burden and distribution.

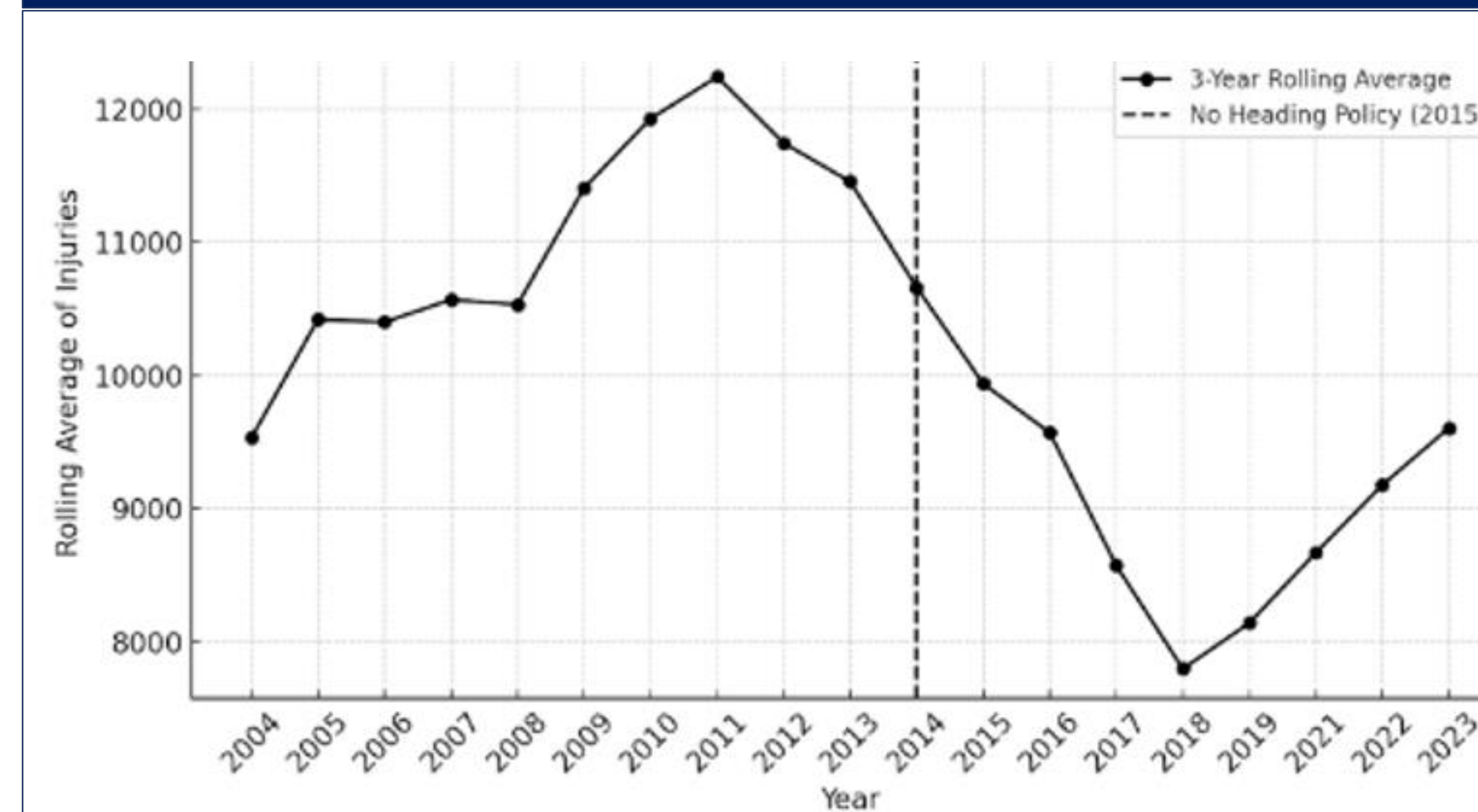

Figure 6 . Change in Variability of Injuries Over Time (3-Year Rolling Average).
This figure presents the 3-year rolling average of head and facial injuries from 2004 to 2023. A steady increase is observed until 2011, followed by a decline after 2012, with the lowest point around 2018. A gradual upward trend is seen post-2018.

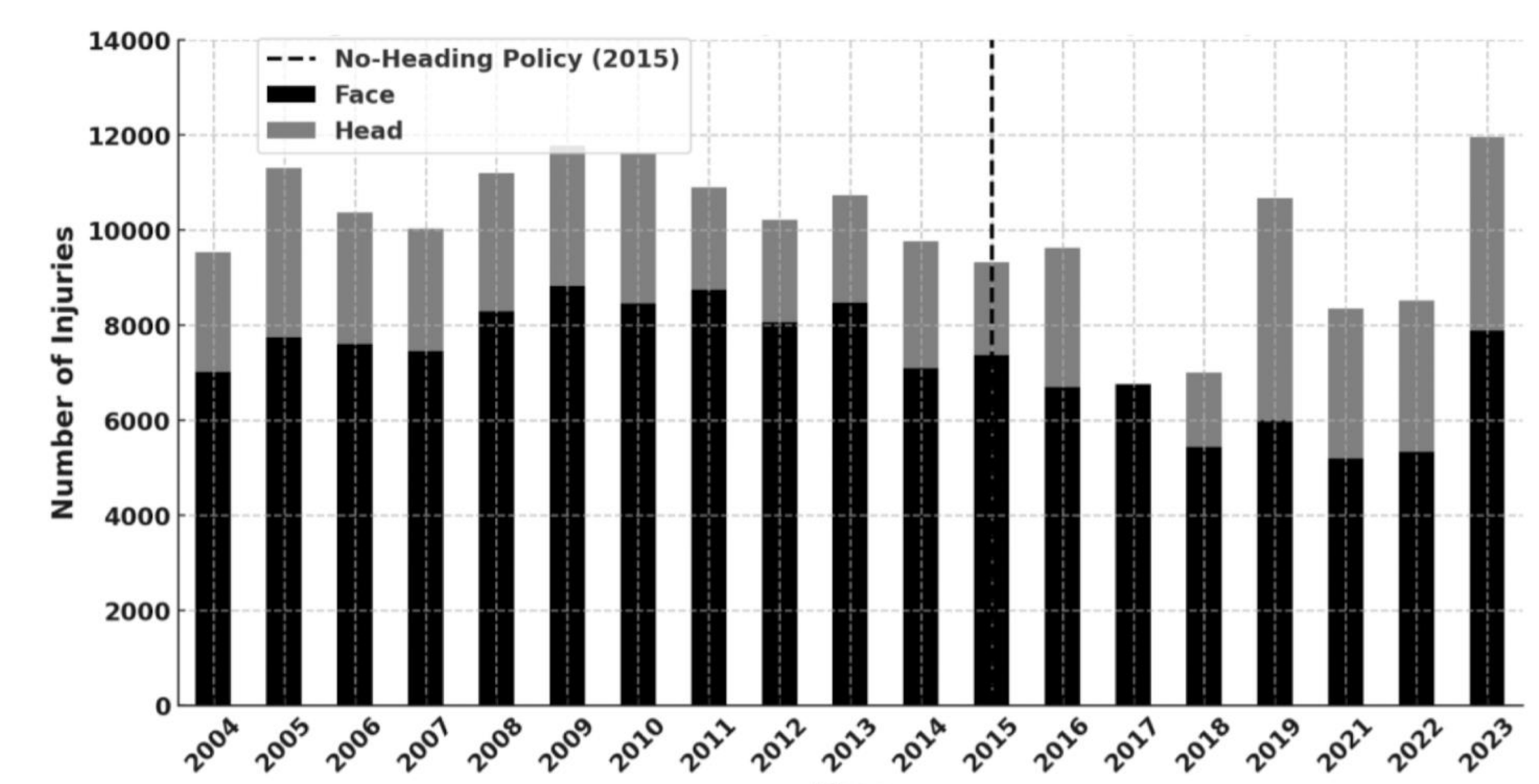

Figure 7. Stacked Bar Graph of Head vs. Face Injuries per Year.
Annual number of head and face injuries from 2004 to 2023, shown as stacked bars. Face injuries consistently outnumber head injuries across all years. Both injury types declined after 2015 but began increasing again after 2018.

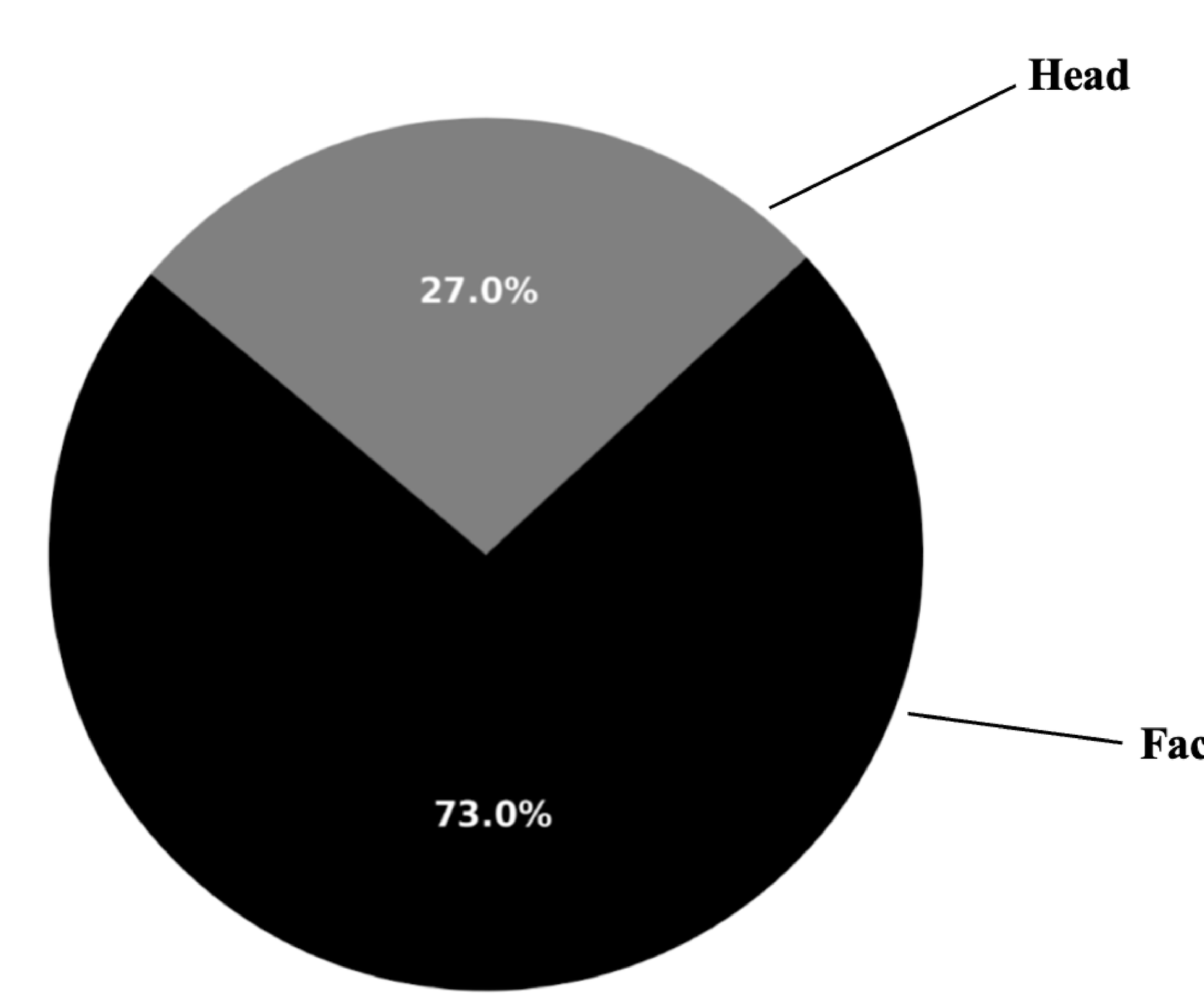

Figure 8: Proportion of Injuries by Body Region.
Pie chart showing the overall distribution of injuries by body region. Face injuries accounted for 73% of all injuries, while head injuries made up 27%, emphasizing the predominance of facial trauma in soccer-related injury data.

Discussion

- The mean annual injury rate decreased significantly post-policy, from 11,013.91 to 9,024.38 injuries/year ($p < 0.05$)
- Policy-level interventions like the 'no heading' policy can meaningfully contribute to head and facial injury mitigation in youth sports
- The persistence of injuries in the post-policy era underscores that the 'no heading' policy alone is not sufficient
- The effect of 'no heading' policy highlights the need for increased safety policy implementation in all pediatric sports
- Although there is a notable difference in injuries before vs after 'no heading' policy implementation, correlation ≠ causation
- Longitudinal studies and prospective injury registries could help disentangle the effects of policy from confounding factors and provide more definitive evidence of causality

Conclusion

- The implementation of the 'No Heading' policy in 2015 led to a decrease in head and facial injuries amongst the pediatric population
- Future studies should aim to clarify the mechanisms behind these trends and evaluate the effectiveness of evolving policies in real-world settings

Acknowledgements